

REMARKS

In light of the foregoing Amendments and following Remarks, reconsideration and allowance of the above-captioned application are respectfully requested.

The Applicants and their representative would like to thank Examiner Jackson for the time and courtesy she extended during a telephone interview with the undersigned Tuesday, June 28, 2005. During the interview, the presently submitted claim amendments were discussed. In particular, the Examiner stated that the presently submitted amendments appear to differentiate the claims over the cited art.

The presently pending application is generally directed to methods for modifying the surface of a substrate. For instance, the present methods generally include forming a cross-linked polymeric anchoring layer on the surface of a substrate by applying a polymer comprising epoxy functionality to a substrate, reacting a portion of the epoxy groups on the polymer with functional groups of the substrate, such that the polymer is directly bound to the substrate, and cross-linking the polymer via reaction of another portion of the epoxy groups. In particular, and as described in the presently presented claims, the substrate of the presently pending claims is a base substrate formed of a substrate material. For example, as described at paragraph 33 of the application, the substrate can be formed of any of a large number of materials, including both inorganic and organic materials. According to the pending claims, the epoxy-containing anchoring layer of the pending claims is directly bound to the material that forms the base substrate, and as such, there is no intervening material bound between the material that forms the substrate and the anchoring layer of the invention.

This direct binding of the epoxy-containing layer to the substrate material can offer many benefits to the process. For example, the presently disclosed process can save both money and time as compared to other, previously known surface modification processes, due at least in part to the fact that no intervening materials are bound between the substrate material and the epoxy-containing layer. Following attachment and cross-linking, the polymeric anchoring layer can still comprise epoxy functionality that can be used, for example, to graft additional materials to the substrate via the anchoring layer.

In the Office Action, claims 1-27 were rejected under 35 U.S.C. §103(a) as being unpatentable over Filippou, et al. (U.S. Patent No. 6,706,320).

As correctly pointed out in the Office Action, Filippou, et al. teach a process for modifying the surface of a substrate by contacting the surface with a modifying agent to bond the modifying agent to the surface. Moreover, the functionality of the modifying agent is chosen to provide good adhesion to the substrate and surface chemical reactivity for subsequent reaction with other material. The particular modifying agents of Filippou, et al. may be coupling agents such as organo titanates, organo silanes, and organo zirconates (col. 12, ll. 52-65), or they may be multi-functional amine-containing organic compounds (col. 12, l. 66 – col. 13, l. 60).

Epoxy-containing compounds are disclosed in Filippou, et al. as possible cross-linking agents for cross-linking the modifying agents one to another, but these cross-linking materials are only described as being bound to the modifying agents, to other cross-linker molecules, or to a co-crosslinking compound (col. 14, l. 56 – col. 15, l. 7). Thus, Filippou, et al. does not disclose or suggest a surface modification process including reaction of an epoxy group on a polymer directly with functional groups of a material that forms a substrate in order to directly bond the epoxy-containing polymer to the material that forms the substrate, as is found in the presently pending claims. In particular, there is an intervening material between the base substrate and the epoxy-containing materials of Filippou, et al. In the presently pending claims, there is no such intervening material, and the epoxy-containing polymer is bound directly to the material that forms the substrate itself, and not to any applied coating material or layer. As such, Applicants respectfully submit that the presently pending claims patentably define over Filippou, et al.

It is believed that the present application is in complete condition for allowance and favorable action, therefore, is respectfully requested. Examiner Jackson is invited and encouraged to telephone the undersigned, however, if any issues remain after consideration of this response.

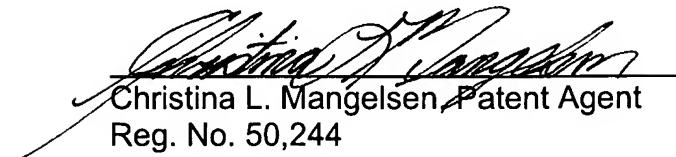
Please charge any additional fees required by this Amendment to Deposit Account No. 04-1403.

Appl. No. 10/733,120
Amendment Dated June 30, 2005
Reply to Office Action of May 18, 2005

Respectfully submitted,

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6/30/05
Date


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